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Subject: comments on RETI Draft Phase 2A Report

Comments on the Phase 2A Draft Report

Since only transmission engineers can comment meaningfully on the technical adequacy of the conceptual transmission plan, I will not attempt to add to their comments. However, I can usefully comment on the presentation of the enormous mass of data included in the distributed materials. Intelligible presentation is critical to public assessment and understanding of the plan.

I am completely aware that very hasty publication of the report was considered to be necessary. These comments should not be interpreted as being critical of the individuals who had to prepare the report in such haste.

Some of these comments may suggest that the commenter was somewhat, even unexpectedly, confused. If that is the case, the confusing organization of the report and limitations of the text should be given a fair share of the credit.

Cross-referencing

No opportunity to insert cross-references should be overlooked. Merely for example:
1) the boxes in the flow chart should be cross-referenced to relevant text and tables;
2) sheets 11-14 in Appendix A report the values of line segment criteria; the sheet names should include references to the criteria.

Formulas

The authors should make sure that every formula used to calculate reported values is displayed and fully explained in the report.

Improving the displays of line segment data

The organization of the line segments by function into transmission groups is eminently sensible and clarifies the plan significantly. All the displays of line segment data - spreadsheets, tables, etc. - in the report and in the supplementing materials should likewise be organized by transmission group. Ordering the displays by transmission group would make the spreadsheets, etc., vastly more readable and interpretable.

The line segments within a transmission group may constitute a single connection between terminal points, or there may be several “natural” subsets of segments, each performing a distinct function. If there are logical subsets, the line segments within each of the subsets of line segments should be displayed in a geographically consecutive order, which would be much more informative than the present alphabetical order. If a table lists both line segments and substations, the

substations likewise should be listed in a geographically consecutive order, interspersed with the line segments connecting them. Though reorganizing the displays of line segments by transmission group and by subset within group (when possible) would probably require significant effort, the great improvements in readability and interpretability obviously would make the effort worthwhile.

Reorganizing the displays of line segment data - technical note: It would not be difficult to devise and adjoin to tables a multi-part key on which line segments and substations could be sorted to achieve the ordering advocated above.
Keys would be concatenations of identifiers (numerical might be simplest) of the transmission group, subset, and line segment or substation.
Line segments and substations would have to be assigned values that would sort them in the correct geographically consecutive order.
Optimistically, rows and columns of tables can be sorted on the key by the software that created them.

Environmental scores of line segments

The usefulness of the environmental scores of line segments can be questioned for at least two different reasons: 1) the metrics are unfortunately and inevitably arbitrary, and 2) the segments are conceptual and not exact alignments. The sets of values of EnvFactor, ROW_Val, and CharVal are arbitrary enough that relative values of the environmental scores may be unlikely to furnish very reliable comparisons. The conceptual nature of the segments may not have such a large effect on usefulness of scores, at least for the many segments that involve existing lines or existing ROWs or are adjacent to them. Perhaps pointing out to readers that many of the segments in the conceptual plan are not all that conceptual would be useful.

The evaluation of each line segment by an expert panel must have identified one or more data items which principally influenced their choice of level of environmental concern. Listing these critical factors for each line segment would provide valuable information. Unfortunately, if these critical factor(s) were not noted when the choice was made, they very likely cannot be recovered now.

Description of Criterion D: The description of “EnvFactor” does not state clearly its presumed relation to the level of environmental concern assigned by an expert panel. The values associated with different levels of “EnvFactor” are not given.

Displaying the values assigned to ROW_Val and CharVal as bullet points would be much clearer.

There must exist a spreadsheet which displays the data from which the environmental scores of line segments have been calculated and in which the calculation of scores was performed. This spreadsheet, of course organized by transmission group and subsets as described in a preceding section, should be added to the Supplementing Materials. Line segments consisting of several sections having different characteristics would

have complicated the calculation, but the data and scores of the sections should not be omitted from the Supplementing Materials.

The report could potentially include discussions of the environmental scores at several different levels: individual segments (of dubious value), subsets of line segments constituting a path (defined above, possibly useful), and the transmission group level. Only the composite environmental scores of transmission groups are discussed.

The report contains almost no interpretation of the highly aggregated transmission group scores, and the significances and the appropriate interpretations of the transmission group scores are not evident to me. The notes of the June 10 meeting contain a directive that the Phase 2A Final Report is to “explain the reasons for the relative environmental rating of each Group” – a task that appears to me to be extremely challenging. Are the scores to be considered merely as rather unreliable estimates of relative environmental concern that should not play any role in decision making? For example, the report states that the Foundation and Delivery lines are expected to be needed, no matter what the future course of energy development is – so what does that say about the usefulness of the environmental scores of these two transmission groups?

A summary, by transmission line group, of the mileages of line segments evaluated as having high, medium, and low environmental concern would be of considerable interest. Also see the suggestion in the Maps section below that a map displaying the line segments and their levels of environmental concern be prepared.

Tabulating the transmission group environmental scores per mile and the proportions of the total length of transmission group lines
in each of the EnvFactor, ROW_Val, and CharVal categories,
in each pair of categories of these variables,
and in each triplet of categories of these variables,
might give some idea of the factors responsible for differences in environmental score/length values of the transmission groups. The suggested tabulations might respond to the directive to explain the reasons for the relative environmental ratings of the groups. However, I wouldn’t guarantee the informativeness of these suggested comparisons between transmission line groups.

CREZ environmental scores

Spreadsheet(s) displaying the variables from which the revised CREZ environmental scores were computed, analogous to the spreadsheets in the Phase 1B report, should be included in the Supplementing Materials.

Combined CREZ energy factor

There is no explanation of the purpose or any aspect of this factor in either the report or the appendices. I recall hearing a vague reference to it early in some conference call and a promise that it would be explained later in the call. I don’t think that any explanation ensued. Obviously this factor must be thoroughly explained in the report.

Comparisons of transmission groups

Comparisons of the energy, cost, and the various scores of transmission groups to the median values of these measures or to scores of other groups should always be stated in terms of the quantities the scores represent (example - “higher than median cost”), not in terms of the scores themselves (“example – lower score”). I am not sure that these comparisons are always stated in the preferable terms.

Appendix A

Many of the descriptions of the “material” are so brief that they are far too obscure. More complete descriptions would be a significant help to readers. If a sheet collects results from other sheets, as the Seg Summary sheet does, the sheets from which results are collected should be listed.

Maps, maps, maps

Transmission plans are the perfect example of a subject where pictures are worth many, many words. You can’t have too many maps.

One or more maps displaying the line segments and indicating their different levels of environmental concern by different colors might provide some thought-provoking information about the reasons for the relative environmental ratings of the groups.

I had thought that a map specifically identifying the collector groups might be useful, but it appears that they can be figured out well enough from the lists of segments in the report and the maps of collector groups.

The pair of “Existing Transmission Line System and Draft RETI Projects” maps prepared by the CEC is an exceedingly useful addition to the information about RETI. A corresponding pair of maps showing only the RETI Projects, and indicating their voltages, their ROW categories, and their construction categories might also provide enough useful information to justify their preparation.

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